

## ABSTRACT

Methods system and apparatus, including computer program products, for monitoring polishing a substrate. A polishing pad mounted on a platen, is rotated at a first rotation rate, and a carrier head is rotated at a second rotation rate that is different from the first rotation rate. The carrier head carries a substrate and presses the substrate against the polishing pad. A sequence of data traces is acquired using a sensor mounted in the platen, wherein each data trace results from a separate scan with the sensor along a path across the substrate, and wherein the first and second rotation rates are such that a plurality of paths corresponding to a predetermined number of consecutive scans are substantially evenly radially distributed across the substrate.

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